UPPER TRISHULI-1 HEP (216MW)

Client	**Nepal Water and Energy Development Company Private Limited**
Owner's Engineer	**Tractebel Engineering GmbH / Jade Consult**

REVIEW NOTE

Contractor	**Doosan Heavy Industries & Construction Co., Ltd.**		
Title of the Document	Structural Calculation for Inlet Structure of Diversion Tunnel		
Document No.	UT1-C-010-CVL-DC-42004	Revision	0A
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		Present Review Status	**RR**

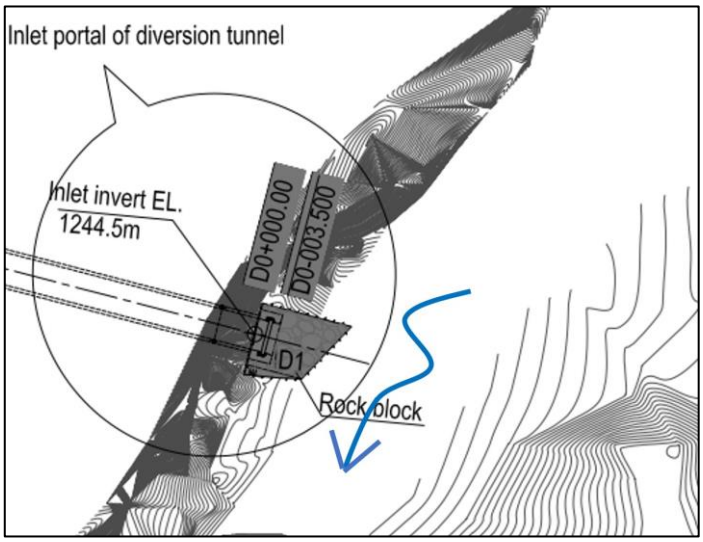
A: Approved AN: Approved as Noted RR: Returned for Resubmission FI: For Information, only.

Comments:

1. The document under review is part of the Design Optimization Proposal process.
2. Chapter 1.1 „Project Profile:
   - The cross section is not D-shaped. The flow cross section is a trough cross-section with a width of 5.00m, vertical sidewalls with a height of 3.50m and an arc shaped roof top with a radius of 2.83m.
   - *"The inlet tower of diversion tunnel is bank-tower types…"* has to be clarified:
     - the intake structure is not an intake tower;
     - what can be understood with *"…bank-towers types…"*?
   - The length of the intake structure is not 3.50m but 9.50m.
   - Figure 1.1.2: The plan shall show the intake structure in its whole length as it is shown in figure 1.1.1.
3. Chapter 5 Calculation result:
   - Floating, bearing and sliding resistances of the intake structure have not been checked. As per site conditions, the intake structure of the diversion tunnel will be situated mostly exposed in the river and is not mostly enclosed in rock, see photo below.

Photo: Diversion Tunnel, Intake Structure

During flood season/ during operation while weir gates are open, high flow velocities have to be considered. As the alignment of the intake structure lies almost perpendicular to the flow direction of the Trishuli River, lateral pressure to the intake structure shall be considered.



Sketch: Diversion Tunnel, alignment of intake structure

As the concrete works of the intake structure of the Diversion Tunnel have already commenced, the contractor have to apply corrective measure if necessary, which guarantee stability and durability of the Diversion tunnel intake structure also during operation time of the Upper Trishuli-1 Project.

DISCLAIMER

Any approval will not release the Contractor from any of his obligations under the Contract.

Sebastian Beck, Chief Design Engineer